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10/537,768

09/26/2005

Paolo Magni

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23117

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07/23/2007

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EXAMINER

CLEMENTE, ROBERT ARTHUR

ART UNIT

PAPER NUMBER

1724

MAIL DATE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/537,768

**Applicant(s)**

MAGNI, PAOLO

**Examiner**

Robert A. Clemente

**Art Unit**

1724

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-7 is/are allowed.
- 6) ☒ Claim(s) 8-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 June 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description:

“100” in figure 1 and “200” in figure 2.

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

2. The disclosure is objected to because of the following informalities: In page 5 lines 4 – 6, the claims should not be referred to in the specification since the order and numbering of the claims can change throughout prosecution.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 8 and 10 – 12 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5,915,269 to Cahill et al.

Cahill teaches an apparatus for gas chromatographic analysis provided with a capillary column, comprising: a means for measuring the pressure  $p_{i,old}$  of the carrier gas at the input section of the column; a means for storing the quantities measured, or in any case known,  $p_{i,old}$  (pressure of the carrier gas at input) and  $p_{o,old}$  (pressure of the carrier gas at output), and the quantities:  $K(L_{old})$ , pneumatic resistance of the non-modified column, and  $K(L_{new})$  pneumatic resistance of the column after modification of the length of said column; a storage and processing means for calculating a new input pressure  $p_{i,new}$  or a new mass flow  $F_{new}$  (referred to standard conditions) of the carrier gas, according to the method claimed in Claim 1; as well as a means for setting and control of the input pressure  $P_{i,new}$  and/or of the flow  $F_{new}$ . As disclosed in page 18 lines 14 – 15 of the instant application, the means for measuring the pressure  $p_{i,old}$  of the carrier gas at the input section of the column is broadly disclosed to be a device for detection of the input pressure. As shown in figure 1, Cahill shows a pressure transducer (18) that acts as a device for detection of the input pressure. As disclosed in page 18 line 27 and page 19 line 13 of the instant application, the means for storing the

quantities measured and the storage and processing means for calculating a new input pressure or a new mass flow of the carrier gas are both disclosed to be an electronic processor. Cahill shows a computer (28), or electronic processor, that controls the system. As disclosed in page 18 lines 15 – 16 of the instant application, the means for setting and controlling the input pressure is broadly disclosed to be a means for regulating the pressure. Cahill discloses a pressure-regulated source (12) for the carrier gas that inherently is a means for regulating the pressure.

In regard to claim 10, as disclosed in column 6 lines 63 – 64, the pressure-regulated carrier gas source (12), or means for setting and control of the input pressure, is operatively connected to the computer (28), or storage and processing means.

In regard to claim 11, the means for the storage of the quantities of the output pressure for the nonmodified column and the value of the pressure set at output for the modified column is also disclosed to be an electronic processor. As discussed above, Cahill discloses a computer (28), or electronic processor, that could act as the means to store these quantities.

In regard to claim 12, as disclosed in page 19 lines 22 – 23 of the instant application, the means for measuring the output pressure from the column is broadly disclosed to be a detector for detection of the output pressure. Cahill discloses an outlet pressure transducer (20), which functions as a detector for detection of the outlet pressure.

5. Claims 8 – 11 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5,545,252 to Hinshaw et al.

Hinshaw also teaches an apparatus for gas chromatographic analysis provided with a capillary column, comprising: a means for measuring the pressure  $p_{i,old}$  of the carrier gas at the input section of the column; a means for storing the quantities measured, or in any case known,  $p_{i,old}$  (pressure of the carrier gas at input) and  $P_{o,old}$  (pressure of the carrier gas at output), and the quantities:  $K(L_{old})$ , pneumatic resistance of the non-modified column, and  $K(L_{new})$  pneumatic resistance of the column after modification of the length of said column; a storage and processing means for calculating a new input pressure  $p_{i,new}$  or a new mass flow  $F_{new}$  (referred to standard conditions) of the carrier gas, according to the method claimed in Claim 1; as well as a means for setting and control of the input pressure  $P_{i,new}$  and/or of the flow  $F_{new}$ . As discussed above, the means for measuring the pressure  $p_{i,old}$  of the carrier gas at the input section of the column is broadly disclosed to be a device for detection of the input pressure. In figure 1, Hinshaw shows a pressure detector (50) that measures the pressure at the inlet of the column (12). Hinshaw also shows a CPU processing unit (60), or electronic processor, that can function as the storage and processing discussed above. Hinshaw also includes a variable flow restrictor (86) that can function as the means for setting and control of the flow.

In regard to claim 9, Hinshaw discloses a flow meter (45) that acts as a means for measuring the mass flow.

In regard to claim 10, figure 1 shows the flow restrictor (86) is operatively connected to the computer (28), or storage and processing means, through cable 85.

In regard to claim 11, the means for the storage of the quantities of the output pressure for the nonmodified column and the value of the pressure set at output for the modified column is also disclosed to be an electronic processor. As discussed above, Hinshaw discloses a CPU processing unit (60), or electronic processor, that could act as the means to store these quantities.

***Allowable Subject Matter***

6. Claims 1 – 7 are allowed.
7. The following is a statement of reasons for the indication of allowable subject matter:

The examiner did not find any prior art that taught or suggested A method for obtaining reproducibility of the retention times of the components of a mixture to be analyzed in an apparatus for gas chromatographic analysis provided with a capillary column, when one or more of the following variations occurs: a variation in the length of the column, or alternatively replacement of the column with a column having identical real specifications with the exception of the length, and/or a variation in the output pressure from said column, given that the pneumatic resistance  $KC_{old} = K(L_{old})$  of said column is known, the analytical expression of which is:

$$K(L_{old}) = \frac{256 \cdot L_{old}}{\pi \cdot d^4} \cdot \frac{\eta_0 \cdot P_{ref}}{T_{ref}^{1+\alpha}} \quad (9)$$

where:  $d$  is the diameter of the column;  $P_{ref}$ ,  $T_{ref}$  are, respectively, the reference pressure and the reference temperature (referred to standard conditions);  $\eta_0$  is the viscosity of the carrier gas at the reference conditions;  $L_{old}$  is the initial length of the column;  $\alpha$  is the coefficient depending upon the type of carrier gas used; and in which the temperature of said capillary column is maintained equal, instant by instant, starting from the introduction of the mixture into the apparatus, for each analysis of said mixture before and after one of said variations, characterized by the following steps: measuring, prior to said variations, the pressure  $p_{i,old}$  of the carrier gas at the input section of the column, and the pressure  $p_{o,old}$  of the carrier gas at the output section of the column; following upon said variations, measuring the new pneumatic resistance  $KC_{new} = K(L_{new})$  of the column, the analytical expression of which is:

$$K(L_{new}) = \frac{256 \cdot L_{new}}{\pi \cdot d^4} \cdot \frac{\eta_0 \cdot P_{ref}}{T_{ref}^{1+\alpha}} \quad (5)$$

wherein:  $L_{new}$  is the new length of the column; selecting, after said variations, the new pressure  $p_{o,new}$  at output from the column; calculating a new input pressure  $p_{i,new}$  or a new mass flow  $F_{new}$  (referred to standard conditions) of the carrier gas, using the relation:

$$\lambda = \frac{j_{old}}{j_{new}} \cdot g \cdot \frac{P_{o,new}}{P_{o,old}} \quad (1)$$

where:



$$g = \frac{K(L_{new})}{K(L_{old})} = \frac{L_{new}}{L_{old}} \quad (2)$$

$$j_{new} = \frac{3}{2} \frac{\left( \frac{p_{i,new}}{p_{o,new}} \right)^2 - 1}{\left( \frac{p_{i,new}}{p_{o,new}} \right)^3 - 1} \quad (3)$$

$$j_{old} = \frac{3}{2} \frac{\left( \frac{p_{i,old}}{p_{o,old}} \right)^2 - 1}{\left( \frac{p_{i,old}}{p_{o,old}} \right)^3 - 1} \quad (4)$$

setting, after said variations, said new input pressure  $p_{i,new}$  or said new mass flow  $F_{new}$  of the carrier gas into said apparatus for gas chromatographic analysis in correlation to  $\lambda$ .

Both US Patent No. 6,036,747 to Blumberg et al. and European Patent No. 1,041,382 to Colombo et al. disclose methods of adjusting the retention given different column parameters. There is, however, no teaching or suggestion of calculating a new input pressure or a new mass flow rate using the following relation:

$$\lambda = \frac{j_{old}}{j_{new}} \cdot g \cdot \frac{p_{o,new}}{p_{o,old}} \quad (1)$$

**Conclusion**

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Other prior art references listed on the PTO-892 (Notice of References Cited) are considered to be of interest disclosing similar chromatography methods and devices.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert A. Clemente whose telephone number is (571) 272-1476. The examiner can normally be reached on M-F, 8:00-4:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on (571) 272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Robert A Clemente  
Examiner  
Art Unit 1724

RAC

DUANE SMITH  
PRIMARY EXAMINER

  
7-19-07